25 Wilton Place April 9
[1871]

My dear Gray

Many thanks for yours of 21 March — We have not your Balsamorhiza Careyana in all those that we have the ligulae have a slender tube and are articulate on the achene. I think the little group of ~~Heliopsideae~~ Zinnieae a natural one and can find no better than that of the lamina of the ray flowers being sessile or with a tube no longer than broad and persistent on the ripe achene. In many others where the ligulae are barren the achene does not separate but that is only because it is abortive and does not ripen

As you wish me to go on reporting progress and as I have now got into the midst of Anthemideae I send you a sketch of the groups I have attempted for any critical remarks you may have to give.

In the first place the three great groups of Heliantheae Helenieae and Anthemideae certainly do run woefully into each other, and no character that I can detect twixt them as you please is absolute. Generally speaking Heliantheae have a paleaceous receptacle Helenieae a naked receptacle and Anthemideae a different involucre — with subordinate accessory more or less general characters too long to detail here. Anthemideae have perhaps never the opposite leaves so prevalent in the others and the pappus when present is usually different etc. etc. I propose ranging the Heliantheae and Helenieae as follows (subject to rectification on revision after having gone through the remaining tribes) the characters here given are abbreviated, exceptis neglectis.

Heliantheae

1 Lagasceae — Capitula 1-flora glomerata involucro proprio gamophyllo cylindraceo. — Lagasca

2. Millerieae. Capitula pauciflora floribus ☿ sterilibus stylo indiviso, receptaculo praeter ambitum nudo. — Heptanthus Pinillosia, Tetranthus (excl. sp. nonnull. Grisebachianis), Elvira (Microcoecia, Desmocephalum), Lantanopsis, Milleria, Adenocaulon Riencourtia, Clibadium.

species of Perityle), Perityle (only the original sp.) Oxypappus, Burrielia (only the 2 sp. with acute style narrow involucre etc.) Baeria (Dichaeta Nutt. Burrielia DC. ex parte) Actinolepis Ptilomeris Nutt., Hymenoxys Torr. & Gr.), Whitneya, Lasthenia (Hologymne Bartl.), Monolopia, — Riddellia (Psilostrophe) Hulsea, Chaenactis (Acarphaea), Hymenopappus, Syntrichopappus, Bahia (including Monolopia bahiaefolia Benth and M. lanceolata Nutt. = B. arachnoidea Fisch. Mey.), Schkuhria (Achyropappus) and Amauria, Villanova (Unxia H.B.K. Chlamysperma Less.), Florestina, Palafoxia, Rigiopappus Pericome (Galinsogeopsis Sch. Bip.), Amblyopappus, Thymopsis Gen. nov. (Tetranthus thymoides Griseb.), Microspermum

3. Flaverieae Involucri eglandulosi, bracteae ~~[illegible]~~ 2-seriatae aequales additis rarius 1-2 exterioribus parvis Achaenia angusta aequaliter 8-10-costata. Sartwellia, Flaveria (Brotera) Cadiscus.

4. Tageteae. Involucri oleoso-glandulosi bracteae 1-seriatae aequales additis saepe nonnullis exterioribus parvis. Achaenia angusta v. cuneata 8-striata. — Porophyllum, Adenophyllum, Nicolettia, Dyssodia (Clomenocoma, Comaclinium) Syncephalanthus, Hymenatherum (Aciphyllaea), Thymophylla + (Lowellia), Adenopappus, Tagetes, Chrysactinia, Clappia?? Pectis (Eupatorieae DC.)

5 Euhelenieae. Involucri saepius toti bracteae 2-pauciseriatae parum inaequales Achaenia turbinata v. suboblonga sericeo-villosa. — Cephalophora (Graemia Hook.) Helenium (Leptopoda Nutt. Oxylepis Benth. Actinea H.B.K. Amblyolepis DC. Kenuboea DC.), Gaillardia (Agassizia, Cercostylos) Actinella Nutt. (Picradenia Hook.) Hymenoxys Cass. ~~Hete~~ Trichoptilium?

Ursinia (Sphenogyne) must go into Anthemideae

Callilepis DC. and Nablonium have long fine tails to the anthers and must go into Buphthalmeae.

Anthemideae as far as I have gone should never have opposite entire leaves but there are two African species Eumorphia DC. and Mecomischus Gerbini Coss. that have small opposite entire leaves that I know not what to do with — they are unlike anything else — I shall wait and see.

3. Melampodieae. Capitula ∞-flora floribus ⚥ sterilibus stylo indiviso, receptaculo undique paleaceo.— Ichthyothere (Latreillea), Polymnia (Trigonospermum), Espeletia (Libanothamnus Ernst), Chiloglossa, Blennosperma, Dicranocarpus, Guardiola, Baltimora, Lecocarpus, Melampodium (Unxia Linn. non aliorum), Acanthospermum, Schizoptera, Tuxe, Silphium, Chrysogonum (Moonia), Berlandiera, Lindheimera, Engelmannia, Parthenium, Ariolothea DC.?, Parthenice.

4. Ambrosieae. Capitula heterogama v. unisexualia floribus ⚥ sterilibus stylo indiviso antheris subliberis inflexo-appendiculatis, floribus ♀ apetalis.— Iva, Cyclachaena (including your Euphrosyne), Euphrosyne DC. Hymenoclea Ambrosia, Franseria, Xanthium.

5. Petrobieae. Capitula unisexualia dioica floribus ♂ stylo sterili ♀ antheris cassis donatis.— Petrobium, Podanthus, Astemma?

6 Zinnieae Capitula radiata ligulis in achaenio perfecto sessilibus v. subsessilibus persistentibus.— Tragoceros Zinnia, Sanvitalia, Heliopsis, Aganippea.—

7 Verbesineae Capitula heterogama v. homogama floribus ⚥ fertilibus. Achaenia disci angulata subteretia v. a latere compressa aristis 2-3 rarius paleaceis coronata v. calva.— Monactis, Rumfordia, Siegesbeckia, Jaegeria (Allacella Koch), Stemmatella Wedd., Enhydra (Cryphiospermum), Eclipta. Leptocarpha,— Axiniphyllum gen. nov. Zaluzania (Ferdinanda Chrysophania, Chiliophyllum), Sabazia, Eumorphia?? Gymnolomia (Heliomeris - the so-called pappus is often so minute that I cannot find it though sometimes rather prominent) Sclerocarpus (Aldama, Gymnospermum, Dichotoma Sch. Bip.) Montanoa,— Eriocarpha (Dunantia), Rudbeckia (cum gen. separatis)— Chromolepis, Balsamorhiza, Tetragonotheca (Halea), Wulffia (Tilesia), Microcolea Sch. Bip., Scalesia — Borrichia, Pascalia, Epallage, Blainvillea (Oligogyne Eisenmannia Sch. Bip.) Wedelia (Wollastonia), Ogiera (Kegelia Sch. Bip.), Aspilia Thou. (Coronocarpus, Dipterotheca Wirtgenia, Anomostephium), Lipochaeta, Zexmenia, Oyedaea (Serpaea Gardn.)— Wyethia, Tithonia, Viguiera (Leighia) Helianthus (Harpalium, Flourensia) — Perymenium, Melanthera (Lipotriche Br. Trigonotheca Sch. Bip. Psathurochaeta Echinocephalum Gardn. Wurmschmittia Sch. Bip.),— Encelia, Geraea, Barattia, Simsia) Helianthella, Actinomeris, Verbesina, Podachaenium (Cosmophyllum C. Koch, Dicalymma Lem.) Spilanthes, Chaenocephalus Griseb. Garcilassa Poepp.

8 Coreopsideae. ~~Capitula~~ Achaenia plus minus a dorso compressa, caetera Verbesinearum.— Guizotia (Veslingia Vis.) Synedrella, Trichospira, Heterospermum, Glossocardia, Microlecane Sch. Bip. Coreocarpus (Acoma), Coreopsis (Agarista, Pridenaria, Epilepis, Electra, Pugiopappus, Leptosyne, Tuckermannia, Campylotheca?), Dahlia, Cosmos, Bidens (Delucia), Narvalina?, Glossogyne, Isostigma, Chrysanthellum (Hinterhubera Sch. Bip. Adenospermum, Hook. et Arn.)

9 Galinsogeae. Achaenia paleis rarius aristiformibus ∞ coronata. Caetera Verbesinearum v. Coreopsidearum.— Galinsoga (Vargasia), Calea (Amphicalea, Calydermos, Oteiza, Mocinna, Allocarpus, Meyeria DC., Tetrachyra Schlecht.), Baldwinia (Actinospermum. Alveolae receptaculi primo juventute examinatae evidenter paleae subtendentes flores involventes). Marshallia, Blepharopappus, Tridax (Sogalgina, Ptilostephium), Dubautia.

10 Oedereae. Capitula heterogama in glomerulum capituliformem radiatum involucratum aggregata.— Oedera

11. Madieae. Receptaculum praeter seriem palearum circa flores ⚥ involucrum interius constituentem nudum.— Whitneya, Argyroxiphium, Madia (Madorella Madaria Anisocarpus Madariopsis Amida Harpaecarpus), Hemizonia (Hartmannia, Calycadenia), Lagophylla, Layia (Madaroglossa Callichroa, Calliglossa, Callachyris, Oxyura), Achyrachaena.

Helenieae

1. Jaumeae. Involucri bracteae latae ∞-seriatae exterioribus gradatim brevioribus. Achaenia angusta 4-5-angulata.— Lacornia Gissopappus (Schomburgkia DC), Jaumea (Coinogyne, Espejoa. Chaetymenia Hook. et Arn.) Venegasia, Hymenothrix?

2. Baerieae. Involucri bracteae sub-1-seriatae aequales additis rarius perpaucis exterioribus parvis. Achaenia angusta v. oblonga 4-5-angulata v. a latere compressa.— Laphamia (including your and Torrey's

April 20 [1871]

I had intended sending you more notes and one or two queries but have had no time. My Cassia paper was wanting for press & having been read two years ago and I had a few old synonyms to hunt up which I thought would take me a morning and has occupied ten days

Many thanks for your letter just received with the enclosure from Prof Verrill for which I beg to return my warm acknowledgments – I feel bewildered about my address which I have worked upon for some time but have done next to nothing as yet and now the time is drawing near

Hooker has been heard of on his way but not yet of his arrival. He has two friends with him and I believe he has obtained the leave (which was doubtful) to go into the mountains

Ever yours sincerely
George Bentham